UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/357,507	07/20/1999	KIYOSHI TAGUCHI	10059-286	9338

570 7590 08/09/2005

AKIN GUMP STRAUSS HAUER & FELD L.L.P.
ONE COMMERCE SQUARE
2005 MARKET STREET, SUITE 2200
PHILADELPHIA, PA 19103

EXAMINER	
LEUNG, JENNIFER A	
ART UNIT	**PAPER NUMBER**
1764	

DATE MAILED: 08/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/357,507	TAGUCHI ET AL.	
	Examiner	Art Unit	
	Jennifer A. Leung	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4,6,8,10,21 and 23-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,4,6,8,10,21 and 23-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 9, 2005 has been entered.

Response to Amendment

2. Applicant's amendment submitted on May 9, 2005 has been received and carefully considered. Claims 2, 5, 7, 9, 11-20 and 22 are cancelled. Claims 1, 3, 4, 6, 8, 10, 21 and 23-28 remain active.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3, 4, 23 and 24 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 3 and 23, it is unclear as to the structural limitation applicant is attempting to recite by, "the catalyst material constituting said downstream side portion exerts an activity at lower temperature than the catalyst material constituting said upstream side portion," because it is unclear as to what is meant by "activity". Also, it is unclear as to what kind of different catalyst materials exhibit such activities, and where it is disclosed in the specification.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 6, 8, 21 and 25-28 are rejected under 35 U.S.C. 102(b) as anticipated by Johnson et al. (US 3,109,715).

Regarding claims 1 and 21, Johnson et al. (FIG. 1-3) discloses an apparatus comprising:

a reaction segment (i.e., second catalyst chamber **28**) having a catalyst bed for oxidizing carbon monoxide (i.e., counting from the left in FIG. 2, the second catalyst block **31**, wherein the catalyst is an oxidizing catalyst such as palladium, platinum, nickel, silver and the like; column 7, lines 54-63);

a gas inlet (i.e., exhaust gas inlet **16**) and a gas pathway (i.e., comprising the first catalyst chamber **26**) for supplying gas to the reaction segment **28**;

an oxidant gas supplying segment (i.e., via tube **42**, or tube **40**) for supplying an oxidant gas (i.e., supplementary air) to the gas pathway **26**;

a cooler (i.e., heat exchanger **21**, including baffle **35** and fins **38**, **39**; column 4, line 63 to column 5, line 30) for cooling the gas in the gas pathway, in a vicinity of an upstream side of the catalyst bed **31/28**; and

means for heating a downstream side of the catalyst bed **31/28**; said means comprising a portion of the gas pathway (i.e., as defined by chamber **26**) which at least partially surrounds an outer periphery of catalyst bed **31/28**, and is separated from the catalyst bed **31/28** by a wall (i.e.,

divider plate **33**) so as to inherently heat the downstream side of the catalyst bed **31/28** by the gas in portion **26** before passing through the cooler **21/35/38/39** (i.e., due to heat generated during the exothermic reaction of oxidation).

Although a gas comprising a "reformed gas containing carbon monoxide in addition to a main component of hydrogen gas" is not specifically disclosed, the apparatus of Johnson et al. structurally meets the claims the particular gas is not considered an element of the apparatus.

Regarding claims 6 and 25, Johnson et al. discloses a gas flow rate control valve located on the oxidant gas supplying segment (i.e., "Speed-controlled systems can be used to *actuate valves* which permit amounts of air which insure complete combustion of the exhaust gases to flow into the catalyst chambers," column 6, lines 19-30).

Regarding claim 8 and 26, Johnson et al. (FIG. 2) discloses the reformed gas pathway has a first direction (i.e., as illustrated, downward in the first catalyst chamber **26**) prior to passing through said cooler **21/35/38/39**, and a second direction (i.e., as illustrated, upward in the second catalyst chamber **28**) passing through said catalyst bed **31/28**, wherein the first direction and the second direction are opposing.

Regarding claims 27 and 28, the portion of the reformed gas pathway in chamber **26** inherently heats the catalyst bed **31** in chamber **28** by direct heat transfer through the wall **33** (i.e., due to heat generated during the exothermic reaction of oxidation).

Instant claims 1, 6, 8, 21 and 25-28 structurally read on the apparatus of Johnson et al.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 3, 4, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al. (US 3,109,715) in view of Volker et al. (US 4,118,199).

Regarding claims 3, 4, 23 and 24, as best understood, Johnson et al. discloses the catalyst bed **31/28** being supported by a metallic material (i.e., honeycomb units comprising alumina; column 6, line 70 to column 7, line 65). Johnson et al., however, is silent as to an upstream side portion of the catalyst bed **31/28** being formed of a different catalyst material than that of a downstream side portion, such that the catalyst material constituting the downstream side portion exerts an activity at a lower temperature than the catalyst material constituting the upstream side portion. Volker teaches a catalyst bed (i.e., in the case of a single monolith; column 2, lines 29-33) which preferably comprises different catalyst materials for an upstream side portion relative to a downstream side portion (column 3, lines 13-45), wherein the catalyst material constituting the downstream side portion exerts an activity at a lower temperature than the catalyst material constituting the upstream side portion (i.e., as characterized by the "positive gradient" of

catalytically active substance that increases in amount over the length of the catalyst system, in the direction of exhaust gas flow; column 2, lines 52-68). As defined by applicant's specification (page 29, paragraph 2), "The part with low reactivity to CO may be formed on the catalyst layer by providing a part carrying a reduced about of catalyst." It would have been obvious for one of ordinary skill in the art at the time the invention was made to select a catalyst material having an activity at a lower temperature for a downstream side portion of the catalyst bed relative to a catalyst material on an upstream side portion of the catalyst in the apparatus of Johnson et al., on the basis of suitability for the intended use, because such a catalyst configuration increases the useful life and effectiveness of the catalyst bed, as taught by Volker et al. (column 3, line 56 to column 4, line 15).

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al. (US 3,109,715).

Johnson et al. discloses another embodiment wherein, "the invention is produced by employing an annular catalyst support rather than a block shaped support as shown in the embodiments of FIGURES 1 and 5 hereof," (see column 13, line 47 to column 14, line 22), essentially defining a reaction segment having a tube-shape with a reformed gas pathway formed around the reaction segment. Thus, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to select such a configuration for the apparatus of Johnson et al., on the basis of suitability for the intended use thereof.

Response to Arguments

7. Applicant's arguments with respect to claims 1, 3, 4, 6, 8, 10, 21 and 23-28 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Leung whose telephone number is (571) 272-1449. The examiner can normally be reached on 8:30 am - 5:30 pm M-F, every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer A. Leung
August 5, 2005

Hien Tran

HIEN TRAN
PRIMARY EXAMINER